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**XX**  
**NOTES ON NEW OR RARE FISHES FROM HAWAII**

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AND  
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The authors spent sometime in Hawaii in the fall of 1925 in connection with the establishment of the Pan-Pacific Research Institution developed by the Pan-Pacific Union, of which Mr. Alexander Hume Ford is the efficient secretary. In frequent visits to the prolific markets of Honolulu, Doctors Jordan and Evermann made a large collection of fishes for the museum of the California Academy of Sciences.

This collection has been studied jointly by the present writers and by Dr. Yojiro Wakiya, director of the Fisheries Experiment Station of Korea. Jordan and Evermann, while in Honolulu, made, usually, daily visits to the fish markets where they examined in as much detail as possible, the catch of the various fishermen as brought in and put on sale, purchasing or otherwise securing specimens thought to be new or rare, and taking measurements and life-color notes.

Doctors Tanaka and Wakiya each spent several months in the winter of 1925-26 at Stanford University where Dr. Wakiya paid special attention to the Carangidæ. He wrote up the species of *Uraspis* and *Leucoglossa* and compared them with Japanese examples. Dr. Tanaka went over the entire

November 14, 1927.



collection, the Carangidæ excepted, verifying Jordan and Evermann's field notes and descriptions. All the keys were drawn up by Dr. Jordan and tested by Dr. Evermann.

Many courtesies were extended to us in connection with our visits to the Honolulu fish market. First of all, we must mention Mr. J. E. Illingworth, entomologist, of the Bishop Museum, who came early every morning with his car to take us to the markets. Dr. Frederick G. Krauss, professor of Agronomy, University of Hawaii, photographed for us several specimens of fishes. Dr. Stanley Ball, curator of collections, Bishop Museum, extended many courtesies in connection with our examination of the collections in that institution. To Dr. C. H. Edmondson, professor of Zoology, University of Hawaii, and Dr. Oestergaard, in charge of the sea-side Biological Laboratory at Waikiki Beach, we are under many obligations for permission to use their laboratory in preserving and caring for our specimens. Mr. F. A. Potter, director of the Waikiki Aquarium, aided us materially in connection with our examination of the fishes in that institution. And we must not fail to mention our old Chinese friend, W. K. Alana, fish dealer in the Honolulu market, who, on each of our many visits to Honolulu in the past 24 years, has never failed to help us in every way possible in securing new or rare specimens. To all these and others who aided us in any way we wish to express our grateful appreciation.

One feature of the local fauna may be especially noted. Nearly all collections in Hawaii have been made in the summer. With October a considerable change takes place, and many of the rare species, especially of *Carangidæ*, appear in abundance, coming in from the open sea or from farther south. The chief fisheries are now carried on by Japanese, who venture out to sea much farther than ever did the Hawaiians who seldom went beyond the coral reefs, where reefs exist. The fauna of the reefs is much less abundant than in the period of the first extensive explorations, those of Dr. Oliver P. Jenkins in 1889, and of Jordan and Evermann in 1901. Probably no species has been actually exterminated by overfishing, but many once common have now become rare.

The type specimens of the species here described are in the Museum of the California Academy of Sciences.

## Family AETOBATIDÆ

1. *Aetobatus narinari* (Euphrasen)Hawaiian name, *Hihimunanu*

A huge example weighing 200 pounds seen in the market. The teeth 21/14, of a clear dark purple-blue. Color light brown; spots everywhere, light yellowish, paler than in young. The monstrous jaws of this example are now in the Museum of the California Academy of Sciences.

## Family BELONIDÆ

*Thalassosteus* Jordan, Evermann & Tanaka, new genus*Type: Belone appendiculata* Günther.

This genus is an ally of *Tylosurus*, with which it agrees in general characters, differing especially in the presence of a very peculiar bony keel on the lower side of the tip of the lower jaw. This keel is about half deeper than long, its length about 1.7 in eye. The bones in this genus are all intensely green in life, the color more intense than in any other of the *Belonidæ*. The dorsal and anal are many-rayed, the anterior lobe of each high and falcate.

(θα'λασσα, sea-green; ὀστε'ον, bone).

2. *Thalassosteus appendiculatus* (Günther)

A single large example, 1.05 meters long.

Head 1.46 in trunk; depth 5.74; width of head 1.16 in its depth; eye 2.18 in postorbital part of head, 1.2 in interorbital space, 5.26 in snout; pectoral 3.6 in head; ventral 4.27; D. 25; A. 23; P. 13; V. 6; scales about 570 in a longitudinal series to base of caudal; keel on lower jaw  $\frac{3}{5}$  diameter of eye; snout nearly twice rest of head.

Body very elongate, strongly compressed, the sides flattened; caudal peduncle depressed, flattened above and below; head slightly deeper than wide, flattened at tip, the sides strongly compressed, under surface narrowly constricted; eye rather large, longer than deep, combined length of eye and postorbital part of head 1.6 in jaws; interorbital broad, slightly concave across; nasal cavity large, close to eye; jaws

long, subequal, rather slender; lower jaw with a large and very peculiar keel below at tip, compressed laterally; cleft of mouth extending to below center of eye; teeth in jaws strong canines, present to tip, intermingled with very small acute teeth; no vomerine teeth; gill-openings large, the membranes continued forward below, separate, free from the isthmus which is long and narrow; no gillrakers; pseudobranchiæ small but developed. Dorsal fin inserted nearer origin of ventral than base of caudal, anterior rays longest, so that anterior portion of fin becomes a falcate lobe, posterior rays short, subequal, last ray a little longer; anal inserted below origin of dorsal, similar in form to dorsal fin but the last rays not produced; pectoral rather small, as long as postorbital part of head, its upper rays longest, the posterior margin obliquely rounded; ventrals inserted slightly nearer base of caudal than posterior rim of eye; caudal deeply lunate, the lower lobe much the longer; caudal peduncle keeled on either side at base of caudal.

Scales small, slightly imbricate; cheeks thickly scaled; front of opercle narrowly scaled; lateral line running low and posteriorly close above the keel on either side of caudal peduncle.

Color in spirits, upper third of body dark greenish (in life peculiarly bright green), lower part whitish; between these two colors a broad silvery bluish longitudinal band present; head mostly gray, bluish black above; lower parts whitish; teeth and jaws including the keel of lower jaw a very deep green more intense than in any related species; vertical fins all dusky, deeply tinged with bluish and dark-tipped; caudal with dark posterior margin; pectoral dusky tinged with bluish; ventral dark, similar, with blue; lateral band white in life.

The single specimen seems to be identical with *Belone appendiculata*, described by Dr. Günther, from Solomon Islands.

### 3. *Ablennes hians* (Cuvier & Valenciennes)

Three specimens 740 to 770 mm. long.

D. 24 or 25; A. 27. Dorsal high, very acutely falcate, its depth 2.75 in head, posterior rays high; anal similar in form to dorsal, posterior rays long, but not so long as the corresponding rays in dorsal; anal inserted a little in advance of



origin of dorsal, the latter fin inserted above seventh to ninth ray of anal. Jaws not closing, the upper at base curved upward; thickness of body a little more than half depth; no keel at caudal base.

Color in life, dark green, sides abruptly silvery; black half-bars 4-7 in number (12 to 14 *vide* Regan), varying in number and size, but quadrate in form; no green on head, nor on jaws and teeth; falcate part of dorsal and anal dusky, tips much darker, posterior rays of the former fin blackish, with darker distal parts, while the corresponding rays of anal are whitish, with no trace of darker.

This species is not uncommon in Hawaii. The Pacific form (*melanostigma* Cuvier & Valenciennes), seems to differ from the Atlantic *Ablennes hians* Cuvier & Valenciennes, in the less compressed form and the angular (not rounded) form of the dark cross-bars. These marks are variable, and probably but one cosmopolitan species of *Ablennes* can be defined at present.

#### Family HOLOCENTRIDÆ

##### 4. *Myripristis chryseres* Jordan & Evermann

Color deep red, with faint pink streaks; fins mostly bright golden yellow, with slight red shades; ventrals and pectorals deep red; a black shoulder-blotch, mostly on opercle above, smaller than in *M. murdjan*. Eye very large.

#### Family GEMPYLIDÆ

##### 5. *Promethichthys solandri* (Cuvier & Valenciennes)

D. XVIII-I, 17 + 2 or I, 18 + 2; A. I, 15 + 2; eye very large; snout 3.17 in head; maxillary to front of pupil. Teeth sharp, unequal, one-rowed in front, largest in upper jaw.

Color, steel-blue marked with black. Stomach and intestines crowded with small white worms.

Not rare in the markets of Honolulu in September.

## Family BRAMIDÆ

6. *Taractes steindachneri* (Döderlein)

Dark steel-gray with greenish pectoral; last rays of caudal dark green; edge of dorsal and anal darker. Scales without ridges, 45; dorsal 33; anal 28; pectoral very long, longer than dorsal lobe, reaching middle of anal; dorsal lobe high, falcate,  $\frac{3}{4}$  head; anal lobe similar; maxillary reaching middle of large eye, which is twice snout and 3.5 in head; caudal deeply forked. A specimen in the Bishop Museum examined.

7. *Eumegistus illustris* Jordan & Jordan

Part of a large example was seen in the market at Honolulu.

8. *Zalanthias kelloggi* (Jordan & Evermann)

This beautiful species is remarkably brilliant in life. Anterior half of body very pale pink, the head dark orange; posterior parts of body bright scarlet, this color extending on membranes of the spinous dorsal; fins mostly yellow.

In spirits, the whole body is plain whitish, the red and yellow fading entirely.

With this species should be compared *Zalanthias azumanus* Jordan & Richardson, from Japan (Proc. U. S. Nat. Mus., XXXVII, 470, 1910), as the two are very much alike. This latter species is the *Anthias japonicus* of Döderlein (Fische Japan, I, 19, pl. III, f. 2), the name preoccupied by *Anthias japonicus* Bloch, a species of *Scolopsis*.

9. *Epinephelus lanceolatus* Bloch

One specimen weighing 360 pounds dressed. Teeth even, in very broad bands; no canines; no flexible teeth evident; preopercle almost entire, weakly serrate; supplemental maxillary very small, apparently obsolete, mouth very oblique; maxillary very broad, 3 in head, extending little beyond the small eye; pectoral short, broad; caudal rounded, fan-shaped. Color dirty olive; sides of head uniform dark brown; fins dark. Scales (pores) 80; dorsal XI, 16; anal III, 9. Dorsal deeply notched, the two parts not separated, the spines rather high.

Sold at auction at 40 cents a pound. Chinese very fond of it, but *haole* (foreigners) do not like it. It is sold for \$1.50 per pound when sliced.

But one specimen of this enormous fish was seen. Its inordinate value and the haste of the fishermen who cut it into steaks, made careful description impossible. Of the known species it seems nearest to *Epinephelus lanceolatus* Bloch, but it is very likely new to science.

#### Family NOMEIDÆ

##### 10. *Cubiceps thompsoni* Fowler

Very unlike *Ariomma*, certainly not of the same genus. The type in the Bishop Museum is a specimen 1.5 feet long, bluish with large firm scales.

#### Family CARANGIDÆ

##### 11. *Megalaspis cordyla* (Linnæus)

A single specimen in the Bishop Museum.

Finlets 5; tail short; eye very large; depth 1.25 in head; caudal equal to snout; eye 2 in snout. Body pale greenish or bluish and white, no red; a black opercular spot. Not previously recorded from Hawaii.

##### 12. *Decapterus canonoides* Jenkins

Head 4.1 in length; depth 5.1; dorsal rays 36 + 2.

Body elongate; no visible teeth in jaws; teeth very faint on vomer and tongue. Soft dorsal black at tip; opercular spot plain; very faint dark shade on side.

This species is common in the Honolulu market and seems valid.

##### 13. *Caranx stellatus* Quoy & Gaimard

Eye golden; teeth in one large row in jaws; small teeth on vomer, palatines and tongue; golden shades on back; pectoral, lower side of head, back and sides, irregularly freckled with small sky-blue and black on brassy background; no silvery;

small sky-blue spots everywhere on back; golden about eye, with sky-blue shades before and below it; dorsal lobe dark, the whole fin shaded with sky-blue, axil dark within, no opercular spot; lower fins all black; a blotch of dark dots above base of pectoral.

Dorsal lobe 1.5 in head; eye 2 in snout, which is 3 in head, 2.5 in depth of body; head 3.5 in length; depth 3; gillrakers moderate, about 30; snout rather long, slightly depressed before eye. D. 24; A. 23. Length 2 feet. This fish is common in the markets of Honolulu and is known as Mukomini. It is near *Caranx melampygus*, the common Ulua, but is known by the blue-golden coloration. The synonymy of this and some related species is uncertain.

14. *Caranx tenebrosus* Jordan, Evermann & Wakiya,  
new species

Head 3.3 in length of body; depth 2.83; eye 4.5 in head, 1.5 in preorbital. Dorsal VII-I, 21; anal I, 17; scutes 26; breast scaly, with a small naked patch just before ventral; teeth as in *Caranx melampygus*, no differentiated canines. Body a little more elongate than in *Caranx melampygus*. Preorbital broad, half wider than in *Caranx elacate*; dorsal lobe bluntish, a shade more than half head, equal to preorbital; anal lobe similar; pectoral falcate, very long, 2.75 in length of body, ventrals short; maxillary half head, reaching posterior part of pupil. Color of body and fins all black, as are the lateral scutes; no opercular spot; scutes strong; gillrakers 2 + 10, long and strong.

Two specimens were seen in the Honolulu market, the larger weighing about 12 pounds. The species was first taken in American waters by Lieut. Henry E. Nichols, U. S. N., in 1880, at Sulphur Bay, Clarion Island, Revillagigedo Group, and the specimen obtained (now No. 28,385, U. S. Nat. Mus.) was described by Jordan and Gilbert (Proc. U. S. Nat. Mus., IV, 1881 [1882], p. 227), as *Caranx lugubris* of Poey, a related Atlantic species. This specimen we now designate as the type of *Caranx tenebrosus*.

Genus *Uraspis* Bleeker*Uraspis* Bleeker, Amboina, VI, 418, 1855

Type: *Uraspis carangoides* Bleeker = *Caranx uraspis* Günther.

Body oblong; teeth in each jaw small and even, in one or two series, none on vomer, palatines and tongue; palate and tongue covered with thick membrane, the tongue and some space around it abruptly white in all species examined, the color contrasting sharply with the blue-black of most of the rest of the mouth; soft dorsal and anal fins without distinct anterior lobe, the number of fin-rays greater than usual in *Caranx*, none of the rays produced; spinous dorsal small; detached anal spines very short, hidden under the skin in adult; adipose eyelids rudimentary; breast naked; lateral line with a long rather low arch; scutes rather small, each with a blunt keel present along whole length of straight portion of lateral line, *its blunt tip turned forward*, not backward as in *Carangidæ* generally. General color of body more or less dusky, with or without dark cross-bars.

This genus is especially characterized by the forward direction of the blunt spine on the anterior end of each of the lateral scutes, a character unique in *Carangidæ*, and, as in *Leucoglossa*, by the bright white color of the tongue which contrasts sharply with the deep blue-black coloration around it, and by the absence of the usual lobe at the front of the dorsal and anal.

Besides the type species, *Uraspis carangoides* Bleeker (*Caranx uraspis* Günther) of southern Japan and the East Indies, and *Uraspis helvola* of the Society Islands and Hawaii, a new species occurs in Hawaii and another in the Ryukyu Islands and southern Japan.

## ANALYSIS OF SPECIES OF URASPIS

- a. Teeth in two rows; pectoral short, rounded, not at all falcate; ventrals long, nearly as long as head, reaching anal; keels of scutes prominent, plate-like. Color dark; body with black cross-bars, which sometimes fade in spirits; ventrals black.



- b. Body oblong, the depth 2.5 in length; dorsal fin relatively high, the highest ray 1.5 in head; maxillary reaching center of eye; first and last dorsal spines very short, the tips visible; eye about 4 in head; scutes 32; 6 vertical black bars distinctly extending across soft dorsal, three of them across anal; tip of the fins white.....*carangoides*
- bb. Body relatively deep, the depth 2.2 in length; highest dorsal ray 2.2 in head; maxillary reaching anterior margin of pupil; eye 4.25 in head; scutes 26; vertical bars 7 or 8 in number, faint or sometimes obsolete, not extending on soft dorsal and anal; tips of fins not white; ventrals filamentous, 1.2 in head .....*reversa*, sp. nov.
- aa. Teeth in one row; pectorals short, but moderately falcate; ventrals pale, short, not reaching midway to anal; soft dorsal moderate; lobes of caudal rather sharp; scutes 36 or 37. Body without dark cross-bars.
- c. Body oblong, the depth less than  $\frac{3}{5}$  of body. Color not black but yellowish-gray with pearly luster; caudal dark, dorsal with dark edge.....*helvola*
- cc. Body rather deep, the depth more than half body. Color very dark with no yellowish shades; dark cross-bands; ventral black.....*riukiensis*, sp. nov.

### 15. *Uraspis carangoides* Bleeker

(*Caranx uraspis* Günther)

This species occurs in southern Japan and the East Indies.

### 16. *Uraspis reversa* Jordan, Evermann & Wakiya, new species

Plate 22, fig. 1

Body relatively deep; depth 2.5; head 3.4; eye 4.3; maxillary 2.6; pectoral = head, ventral 1.75; depth of caudal peduncle = eye; caudal lobes 1.4 in head; base of first dorsal 3, of second dorsal 2, in length to base of caudal; first and second dorsal rays longest, 2 in head; last rays 2.5 in first; first anal rays = first dorsal rays, the last = last dorsal; pectoral fin rather long, falcate; lateral line with low arch covering anterior half, the posterior half straight, with 26 scutes, the blunt spine of each turned forward, not backward as in the *Carangidæ* generally. General color of body more or less dusky, with dark cross-bars.



This species is not rare in Hawaii. Two specimens were obtained.

*Type:* No. 307, Mus. Calif. Acad. Sci., a specimen 6 inches long obtained in October, 1925, by Jordan and Evermann, in the market at Honolulu.

#### 17. *Uraspis helvola* (Forster)

Probably originally described from the Society Islands. Once recorded from Japan by Dr. M. Oshima.

#### 18. *Uraspis riukuensis* Wakiya, new species

*Caranx (Uraspis) micropterus*, Wakiya, Annals Carnegie Museum, Vol. XV, Nos. 2 and 3, Serial No. 118, p. 206, pl. XXX, fig. 2, July, 1924. Kii, Japan (not of Rüppell).

D. VIII-I, 29; A. I-I, 22; scutes 36; head 3.44 in length; depth 2.36; eye 4.7 in head. Teeth on each jaw in a single row; maxillary extending to anterior margin of pupil; gillrakers on lower limb of gill-arch 13, longest one 2.17 in eye. Keel on scutes prominent, plate-like, ending in a spine directed forward at anterior end. First and last dorsal spines very short, but the tips visible; pectorals slightly shorter than head, slightly falcate; ventral blackish, 1.45 in head, 1.4 in distance between its insertion and origin of anal; caudal lobes equal to length of head. Color blackish, not crossed by vertical bands, no yellow tinge, no pearly luster when fresh.

This is the species described and figured from the Riukiu Islands as *Caranx (Uraspis) micropterus* Rüppell by Wakiya, but it cannot be Rüppell's species, as shown in the original description and figure given by Rüppell, it has the body no deeper than in *helvola*. The species occurs about the Riukiu Islands, Japan, and in the Province of Kii, Japan.

*Type:* No. 7747, Carnegie Museum, a specimen 210 mm. long, from Kii, Japan.

There is little doubt that *Caranx micropterus* Rüppell is a synonym of *Caranx helvolus* Forster, for the original description and figure given by Rüppell of the former species quite agree with the description given by Günther of the type of the

latter. *Caranx helvolus* of Jordan and Evermann, Fishes of Hawaii, is different. The type locality of *helvolus* is most likely some part of the Indo-Pacific region, probably Tahiti, as Forster made his principal collection in the Society Islands.

**Leucoglossa** Jordan & Evermann, new genus

*Type: Leucoglossa candens* Jordan, Evermann & Wakiya, new species.

(*Carangus helvolus* Jordan, Evermann & Wakiya; not  
*Scomber helvolus* Forster)

This genus has the general characteristics of *Uraspis* except that the blunt spines on the lateral scutes are normally placed, they being directed backwards as in all other *Carangidae*. In *Leucoglossa* the pectoral fins are long and falcate, not shorter than head; the ventral fins are pale, short, not reaching half-way to anal; caudal lobes long. Color blackish, without dark cross-bars. In each of the two known species the inside of the mouth is blue-black, the tongue and the region about it being abruptly clear white, as in *Uraspis*.

ANALYSIS OF SPECIES OF LEUCOGLOSSA

- a. Body oblong, its depth not  $\frac{3}{5}$  its length; keel on scutes distinct but scarcely developed into a plate, ending in a blunt spine at posterior end.....*candens*, sp. nov.
- aa. Body rather deep, its depth more than  $\frac{3}{5}$  its length; keel on scutes each developed into a plate with a blunt spine posteriorly.....*albilinguis*, sp. nov.

19. **Leucoglossa candens** Jordan, Evermann & Wakiya,  
new species

*Carangus helvolus*, Snyder, Bull. U. S. Fish Comm., XXII, for 1902 (Jan. 19, 1904), p. 524; Jordan & Evermann, *ibid.*, XXIII, pt. 1, for 1903 (1905), 196, pl. 32; not of Forster.

D. VIII-I, 28; A. I, 28; scutes 33; head 3.27 in length; depth 2.45; eye large, 4.2 in head. Teeth on each jaw in a single row; maxillary extending little beyond anterior margin of pupil; gillrakers 4 + 15, longest 2 in eye; keel on scutes

distinct, but not developed into a plate, ending in a spine at posterior end; dorsal spines apparently very short, but the tips visible, highest one 2.33 in soft dorsal, which is 2.54 in head; pectorals longer than head, falcate, reaching above sixth anal ray; ventrals whitish, 2.34 in head, not reaching midway between their insertion and origin of anal; caudal lobes rather shorter than head. Body black, not crossed by vertical bands; no yellowish tinge, no pearly luster.

The above description is based on a specimen from Honolulu measuring 268 mm. in length of body. Jordan and Evermann give an excellent plate under the erroneous name of *Carangus helvolus*. The form of body of this species is much like that of *Uraspis helvola*, but the body is black and not tinged with yellow.

We take as type of this species the specimen identified by Professor John O. Snyder as *Carangus helvolus* (Forster), and which is now in the U. S. National Museum at Washington where it bears the number 55,170.

The species is common in the Honolulu markets, especially in the autumn.

20. **Leucoglossa albilunguis** Jordan, Evermann & Wakiya,  
new species

Plate 22, fig. 2

D. VI-I, 27; A. I, 21; scutes 36; head 3.52 in length; depth 2.33; eye 4.75 in head. Teeth on each jaw in a single series; maxillary extending a little beyond anterior margin of pupil; gillrakers on lower limb 15, longest one 1.45 in eye; keel on scutes prominent, plate-like, its spines turned backward. Highest dorsal spine 2.9 in soft dorsal the highest ray of which is 2.17 in head; pectorals longer than head, falcate; ventral short, whitish, 2.17 in head, scarcely reaching midway of distance between its insertion and origin of anal; caudal lobes as long as head.

Color of body black, no cross-bars, no yellow tinge, no pearly luster when fresh.

This species resembles *U. riukiensis*, but may be distinguished by having the ventrals shorter and paler, the pectorals longer, the gillrakers longer, the soft dorsal lower, and especially in having the plate-like keel of scutes not ending in a spine at anterior end.

*Type:* No. 305, Mus. Calif. Acad. Sci., a specimen 11 inches long, collected by Jordan and Wakiya in October, 1925, in the market at **Honolulu**.

**Ferdauia** Jordan, Evermann & Wakiya, new genus

*Type:* *Carangoides jordani* Nichols.

This new genus differs from *Carangoides* Bleeker, in the naked breast. It includes *Caranx orthogrammus* Jordan & Gilbert (1881), and the following two species.

#### 21. *Ferdauia evermanni* (Nichols)

Plate 22, fig. 3

*Carangoides gymnostethoides evermanni* Nichols, American Museum Novitates, No. 3, p. 2, fig. 1 (type and cotype), March 9, 1921, collected August 25, 1920, by B. W. Evermann in the market at **Honolulu**.

This species is not uncommon in the markets at Honolulu.

#### 22. *Ferdauia jordani* (Nichols)

*Carangoides ferdau*, Jordan & Evermann, Bull. U. S. Fish Comm., XXIII, Pt. 1, 1905 (July 29), p. 198, fig. 77; not *Scomber ferdau* Forskål.

*Carangoides jordani* Nichols, American Museum Novitates, No. 50, p. 2, October 24, 1922, collected by D. S. Jordan in 1921, at **Hawaiian Islands**.

This species is, with *F. evermanni*, not uncommon in the Honolulu markets where several specimens of each were examined by the present writers in September and October, 1925.

## Family PRIACANTHIDÆ

23. *Priacanthus ulalaua* Jordan & Evermann

Not rare in the Honolulu markets where the writers examined specimens in September and October, 1925.

24. *Priacanthus meeki* Jenkins

Plate 23, fig. 1

Head 3.21 in length; depth 2.70; eye 2.37 in head; inter-orbital (between bones) 4.22; snout 3.17; maxillary 1.9; depth of caudal peduncle 3.8. D. X, 14; A. III, 15; P. 19; C. (branched rays) 14; scales 14-120-52.

Body ovate, compressed, the upper and lower outlines evenly curved; caudal peduncle short, narrow, strongly compressed; head shortish, with nearly straight profile to origin of dorsal fin; interorbital space convex transversely, a little wider than one-half eye; snout shortish, very blunt, a little longer than postorbital region; mouth wide, oblique, lower jaw much the longer; teeth small, sharp, in bands in jaws, vomer, and palatines; outer teeth in upper jaw much larger than inner; lower jaw with only two rows of teeth, as large as outer ones of the upper; no interior row; preopercle serrated behind and below, its angle obtuse, ending in a large blunt spine; opercle, subopercle and interopercle with entire margins; opercle with two short flat spines, the lower much the larger; pseudobranchiæ well developed; gillrakers 2 + 24, lanceolate, the longest about half eye; dorsal originating over base of pectoral, its spines subequal, eighth longest, 1.9 in head, soft part shorter than the spinous, with angular free margin; anal inserted below seventh dorsal spine; third spine stouter and longer than second, 1.81 in head; soft part similar to soft dorsal, each reaching base of caudal when depressed; pectoral low, shortish, about half head length, with rather acute posterior tip, not falcate, reaching anal; ventral slightly before pectoral, long, reaching beyond base of third anal spine; vent directly in front of anal; caudal slightly emarginate; scales small, strongly ctenoid; head closely scaled, including maxillary, throat and dentary; lips and branchiostegal membranes naked; lateral line rising abruptly for 10 pores from gill-opening, thence concurrent

with back to caudal peduncle, along the middle of which it follows to base of caudal. Color in life, blood-red, deeper red than in *P. alalaua*, or *P. corlinus* (*cruentatus*) with no dark cross-bars or rosy spots; about 15 very faint round dusky spots along lateral line plain deep red, dorsal and anal dark-edged; caudal mesially dark-edged; ventral rays dark; pectoral rosy; inside of mouth deep orange-red; no yellow anywhere. Color in spirits, uniform dark brown; dorsal and anal black, the spines and rays whitish; ventral and caudal blackish, much lighter proximally; pectoral yellowish.

The specimen here figured seems to belong to *Priacanthus meeki* Jenkins, though the scales seem slightly larger, the gill-rakers fewer. The coloration of the body seems substantially the same. The species is rare about Honolulu and may be known by its small scales and deep red color, being almost black in spirits.

25. *Priacanthus helvolus* Jordan, Evermann & Tanaka,  
new species

Plate 23, fig. 2

Head 3.50 in length; depth 2.60; eye 3 in head; snout 3, maxillary 2; least depth of caudal peduncle 3 in head; D. X, 14; A. III, 14; P. 17; C. 17; scales 12-103-40.

Body moderately elongate, the outline evenly curved. Head moderate, eye very large; snout short and blunt, about equal to postorbital region; mouth wide, oblique, the lower jaw longer; teeth small, two-rowed, those of the outer series longer; preopercle nearly entire, with a short, blunt spine at angle; opercular spines obsolete. Gill-structures usual.

Dorsal spines subequal, progressively longer backward, the last longest, 1.9 in head; soft anal similar to soft dorsal, the longest ray about half head; third anal spine 1.85 in head; dorsal and anal not reaching caudal when depressed; pectoral short, half length of head, slightly acute at tip, about reaching anal; ventrals long, reaching third anal spine; caudal slightly lunate. Lateral line as usual; head scaly everywhere except on lips. Coloration in life, pale bronze or yellowish, with no dis-



tinct red, the body nearly white, with irregular blotches of bronze on sides; head dark bronze, suborbital silvery; dorsal fin black, the spines pinkish; spinous dorsal and anal with small obscure blackish spots towards the back; caudal mostly black, the base pinkish; basal area of pectoral copper red; ventral dusky, the membrane dark green, the spines pinkish. In spirits, the body color is plain, dirty, yellowish white, the fins dusky, especially at tip.

This fish is near *Priacanthus meeki*, but is totally different in color, with more elongate body and rather larger scales.

The species is known from one example.

*Type:* A specimen 215 mm. long, No. 345, Mus. Calif. Acad. Sci., obtained by Jordan and Evermann in October, 1925, in the market at Honolulu.

#### Family ETELIDÆ

The group here called *Etelidæ* differs from the *Lutianidæ* in having the dorsal and anal fins entirely free from scales. A few of them (*Apsilus* and *Tropidinius*), have the occipital ridge extending forward over the top of the cranium, as in *Lutianus*. Most of them, however, have the cranium nearly flat, with a distinct line of demarkation shutting off the occipital crest from top of head.

Those genera with the dorsal deeply notched, the allies of *Etelis*, are well defined, as are also *Apsilus* and *Aprion*, which have short pectorals. The other genera or subgenera are all closely related and might be all regarded as subgenera of *Pristipomoides*, as the differences are mainly matters of degree. Of the minor groups, *Rooseveltia* and *Pristipomoides* are fairly defined. The others, *Bowersia*, *Ulaula*, and *Arnillo* might well be regarded as subgenera of *Platyini*. In this paper, however, we prefer to regard them all as distinct genera.

We here present an analysis of the genera (or subgenera) of *Etelinæ* and *Verilinæ*. The characters of the *Etelinæ* proper (*Etelinus*, *Etelis* and *Etelides*, with the related genus *Verilus*), have been well given by Jordan & Jordan (Mem. Carnegie Mus., X, no. 1, December 1927, p. 50).

The *Etelinæ* are all shore fishes of the tropics; *Apsilus* at the Cape Verde Islands, while *Tropidinius* and *Platyinius* are confined to the West Indies. *Etelis* is cosmopolitan. The others inhabit the East Indies and the South Seas.

#### ANALYSIS OF GENERA OF ETELINÆ AND VERILINÆ

- a. *Etelinæ*. Cranium solid; skeleton firm; dorsals more or less fully connected; soft dorsal and anal scaleless; last ray of dorsal and anal each produced; canines usually present, but never large; scales above lateral line parallel with it; dorsal spines 10; anal spines 3.
- b. Dorsal fins with the margin continuous, not deeply notched; coloration mostly olive.
- c. Pectoral very short, rounded, much shorter than head; tongue with small asperities at base; teeth small, the outer slightly enlarged, not canine-like; preopercle entire; coloration plain.
- d. Head rounded above as in *Lutianus*, the occipital crest not extended forward on the cranium; pectoral 1.5 in head; caudal lobes pointed, slightly longer than head; scales 65 (*fuscus*)...*Apsilus* Cuv. & Val.
- dd. Head flattened above, the occipital crest encroaching on top of cranium; pectoral about half head; caudal lobes pointed, not longer than head; scales about 50 (*virescens*).....*Aprion* Cuv. & Val.
- cc. Pectoral long, falcate or lanceolate, little if any shorter than head; coloration nearly plain olivaceous, except in *Rooseveltia*, *Arnillo* and *Pristipomoides*.
- e. Nape keeled, the occipital crest encroaching on interorbital area; canines small, no teeth on tongue; pectoral as long as head, reaching anal; gillrakers 5 + 17; preopercle serrulate; scales 60 (*dentatus*).....*Tropidinius* Gill
- ee. Nape not keeled, occipital crest not encroaching on interorbital area.
- f. Caudal lobes moderate, subequal, neither of them produced in a filament.
- g. Skull thick, with three blunt ridges above separated by narrow grooves; gillrakers few, 4 + 11; canines rather strong; no teeth on tongue; preopercle evidently serrulate; color golden and scarlet (*brighami*? = *zonata*)..*Rooseveltia* Jordan & Evermann
- gg. Skull flat above or gently convex, without notable ridges; gillrakers more than 12 below arch; depth 3.5 in length.

- h. Tongue with a broad patch of teeth; scales 70; gillrakers 4 + 15; color violaceous olive (*violescens*)....*Bowersia* Jordan & Evermann
- hh. Tongue without teeth or with a few asperities at base.
  - i. Anterior teeth in both jaws, small but canine-like.
    - j. Body rather deep, depth about 3 in length; pectoral as long as head, reaching front of anal; gillrakers 5 + 15; preopercle serrulate; scales 60. Color nearly plain, light blue and olive. (*vorax* = *macrophthalmus*).....*Platyinius* Gill
    - jj. Body slender, the depth 3.75 in length; pectoral shorter, not reaching vent; gillrakers 5 + 19; scales 70. Color plain blue and gold, a large bright yellow blotch on upper lobe of caudal (*auricilla*) .....  
*Arnillo* Jordan, Evermann & Tanaka, new genus
  - ii. Anterior teeth very small, not canine-like; pectoral as long as head; gillrakers 5 + 21; scales 68; body slender, depth 3.8 in length; color silvery, nearly plain (*ulaula* = *sieboldi*).....  
.....*Ulaula* Jordan & W. F. Thompson
- ff. Caudal lobes long, unequal, the upper much the longer with a filiform tip; canines small; pectoral pointed, shorter than head; scales large, 60. Color rose red (*typus*).....  
.....*Pristipomoides* Bleeker
- bb. Dorsal fin divided or deeply notched; cranium broad, flat, the median and lateral crests not procurent on it. Pectoral long, falcate. Color brilliant red.
  - k. Maxillary scaly; body slender; canines strong.
    - l. Caudal moderately forked, gillrakers few, 3 + 9 (*marshi*).....  
.....*Etelinus* Jordan & W. F. Thompson
    - ll. Caudal deeply forked, the lobes produced; gillrakers slender, numerous, 6 + 15 (*carbunculus*)..  
.....*Etelis* Cuvier
  - kk. Maxillary naked; body compressed; no canines; gillrakers slender (*aquilonaris*) .....  
.....*Etelides* Jordan & J. C. Thompson

- aa. *Verilinae*. Cranium cavernous; skeleton soft; dorsal divided to base; body rather deep, compressed; scales large (43); gillrakers 17 to base; color black; deep-sea fishes  
 .....*Verilus* Poey

Genus **Arnillo** Jordan, Evermann & Tanaka, new genus

*Type: Arnillo auricilla* Jordan, Evermann & Tanaka, new species.

This genus or subgenus is related to *Bowersia*, differing in minor matters, especially in the absence of teeth on the tongue, these being only minute asperities; the gillrakers are more numerous, 10 + 19, instead of 5 + 14. From *Pristipomoides*, *Arnillo* with *Platyinius* and *Bowersia*, differs in the moderate caudal, neither lobe being produced. The coloration in the type of *Arnillo* is unique in this group. *Arnillo* is the local name in Cuba for *Tropidinius dentatus*.

26. **Arnillo auricilla** Jordan, Evermann & Tanaka, new species

Plate 23, fig. 3

Head 3.5 in length without caudal; depth 3.86; eye 3.71 in head; interorbital between bones 3.55; snout 3.25; depth of caudal peduncle 3.55; maxillary 2.6, its breadth at distal extremity 9.75; preorbital width 6.0; Br. 7; D. X, 11; A. II. 8; P. 16; C. (branched rays) 15; scales 8-70-18.

Body long, compressed, upper and lower outlines equally and evenly curved; caudal peduncle longish, its length 1.73 in head, rather slender, compressed. Head large, stoutish, bluntly conic, its profile nearly straight, with a slight depression over eye; eye large, lateral, high up, with a slightly developed adipose lid; interorbital broad, slightly and evenly convex, separated from occipital region by a transverse groove on which median and lateral crests are procurent; frontal region not narrowed forward; nostrils subequal in size, irregularly circular in shape, close together, much nearer front margin of eye than tip of snout; anterior nostril with well developed posterior flap, the posterior without a flap; snout short, stoutish, with evenly curved profile; maxillary extending midway between anterior margin of pupil and center of eye; preorbital

rather wide, its width 1.62 in eye diameter; mouth large, slightly oblique, lower jaw much the longer; upper jaw with inner band of viliform teeth and a single row of much larger, almost canine-like teeth which are set rather sparsely; lower jaw with similar dentition as in the upper tip, but laterally with only one row of subequal small canines, smaller in size than the corresponding teeth in the upper, and set more closely; vomer and palatines toothed; tongue broadly rounded, free anteriorly and laterally, with a patch of very weak asperities at base; preopercle serrulate behind and below, broadly rounded at angle, above which it has a very shallow notch almost indiscernible; opercle with three flattish points of which the upper two are short and very close together. Gill-openings large, continued forward below, the membranes separate, free from the isthmus; gills 4, a large slit behind the last; pseudobranchiæ well developed; gillrakers on first gill-arch long, lanceolate, 10 + 19 in number, the longest 2.33 in eye diameter. Dorsal inserted over end of first fifth of pectoral, fourth and fifth spines longest, 2.36 in head, last ray slightly produced; anal inserted below third ray of dorsal, third spine longer and stouter than second, its soft part similar in form to soft dorsal; pectoral long, falcate, scarcely reaching vent; ventral inserted slightly behind base of pectoral, reaching a little farther back than pectoral; caudal deeply forked, its lobes subequal. Scales ciliated; cheek with seven rows of scales, opercle with about 12 rows; a small patch of scales in four rows on side of top of head directly in front of transverse groove near occiput; lateral line high, complete, concurrent with back; no scales at base of dorsal or at base of anal.

General color in life, pale gold and gray blue, intermixed over body in fine pattern, the blue forming short diffuse cross-bars on side; golden streaks extending on head; dorsal and pectoral light yellow; anal white; upper lobe of caudal vivid clear yellow, bordered all around with bluish gray; lower lobe gray; a bright, light blue spot at base of each dorsal ray. Color in alcohol, brownish, a little lighter; very faint, irregular blotches visible in places; dorsal dusky; pectoral light; anal and ventral light dusky, first ray of latter fin much darker; caudal dark dusky, the upper lobe mostly yellow, bordered by dark dusky above and beneath.

The species is allied to *Rooseveltia brighami* (Seale) and to *Bowersia violescens* Jordan & Evermann, from each of which it differs in having a more slender body, wider interorbital, and especially in the coloration of body and caudal fin. It is a very beautiful fish, as is also *Rooseveltia zonata*, but the coloration is wholly different. Three examples seen in the Honolulu market.

According to Fowler, *Rooseveltia zonata* (Cuv. & Val.), is identical with *Rooseveltia brighami* from Hawaii, but neither species can be referred to the genus *Apsilus* which is well marked by its short pectoral and keeled nuchal region.

(*aurum*, gold; *cilla*, tail.)

*Type*: No. 348, Mus. Calif. Acad. Sci., a specimen 320 mm. long, obtained by Jordan and Evermann in October, 1925, in the market at **Honolulu**.

#### Family APHAREIDÆ

##### **Aphareus** Cuvier & Valenciennes

The three known species referred to *Aphareus* were all found in the markets of Honolulu on the same day in October, 1925. Each of the three may be regarded as the type of a distinct subgenus. They may be compared as follows:

- a. Gillrakers about 21 (5 + 16); caudal fin moderately forked, shorter than head; last ray of dorsal and of anal about twice length of others; 10 dorsal spines.
- b. *Sacrestinus*.<sup>1</sup> Body relatively deep, the depth 3 to 3.3 in body, third dorsal spine highest, about 3 in depth of body; pectoral fin moderate, 1.2 in head, the lower lobe obsolete or nearly so.
- c. Head 3.3 in length; eye large, 4.5 in head; snout about 3; preopercle, suborbital and suprascapula finely but distinctly striated; mouth moderate, maxillary reaching front of pupil, 1.9 in head; scales 72. Color, dark gray-blue, darker than the other species; head with more or less yellow; caudal fin yellow, tipped with red.  
Size small ..... *flavivultus*

<sup>1</sup> Sacrestin (Sacré Chien), a local name of *Aphareus furcatus*, on the Ile de France.



- bb. *Aphareus*. Body relatively elongate, the depth 3.75; third, fourth, and fifth dorsal spines subequal, about 3 in depth of body; pectoral long, 1.2 in head, lower lobe well developed; caudal lobes long, 1.2 in head; head long, 3.3 in length; snout long, 2.4 in head; eye small, 5.5; mouth large, maxillary 1.7 in head, reaching posterior border of pupil; preopercle, suborbital, and suprascapula very finely striated or almost smooth; scales 72 to 75. General color, blue-gray; caudal with scarcely any red, blackish, with a broad pink edge. Size small, reaching little more than a pound.....*furcatus*
- aa. *Fares*.<sup>2</sup> Gillrakers about 50 (16 + 34); caudal fin very deeply forked, the lobes in adult longer than head; pectoral fin in adult longer than head, its lower lobe well developed; head 3.5; scales 75. Color gray, suffused with pink; fins rosy; a yellow spot on membrane at base of each dorsal ray; weight 20 lbs.....*rutilans*

## 27. *Aphareus* (*Sacrestinus*) *flavivultus* (Jenkins)

*Aphareus flavivultus* Jenkins, Bull. U. S. Fish Comm., XIX, 1899 (June 9, 1901), 300, fig. 4, Honolulu. (Example with the whole top of head yellow.)

*Aphareus furcatus* Jordan & Jordan, Memoirs Carnegie Museum, X, No. 1, 51, 1922. (Not *Labrus furcatus* Lacépède.)

Abundant in the markets of Honolulu in October. Two examples each about 320 mm. long were retained. Snout shortish, blackish, 3 in head; maxillary reaching center of eye; head short, 3.5 in length, the depth 3.2; mouth rather small, the maxillary 2.5 in head; scales 80, gillrakers 5 + 17 = 22; caudal lobes 3.8 in length; third dorsal spine highest.

Color in life, gray-blue with no red or pinkish shades on body; head shaded with golden brown on snout, preopercle and axil; top of head sometimes entirely golden-brown (as in Jenkins's original type); some faint golden shades on sides; dorsal pale yellowish green, with red tips and some blackish on edge of membranes, this shading into red posteriorly; caudal dull yellow, the narrow posterior margin bright red; upper and lower rays marked with red; anal golden, tipped with red; pectorals and ventrals golden with red shading;

<sup>2</sup> An Arabic name of *Aphareus rutilans*.

maxillary gold-shaded; top of head with a shade of golden brown.

This species differs from *Aphareus furcatus* (Lacépède) in the much deeper body and in the dominant color of blue-gray, with considerable red and yellow on the head and fins, and especially in having the third dorsal spine higher than the fourth or fifth. The mouth is smaller, the snout shorter and the short pectoral without a distinct lower lobe. It is well figured by Jenkins, Bull. U. S. Fish Comm., XIX, 1899 (June 8, 1901), 391, fig. 4. The same figure is copied by Jordan and Evermann, op. cit., XXIII, 1903 (1905), p. 235, fig. 96.

## 28. *Aphareus furcatus* (Lacépède)

*Labrus furcatus* Lacépède, His. Nat. Poiss., III, 277, 1803, *Île de France*; from a drawing by Commerson.

*Aphareus furcatus*, Günther, Cat. Fishes, I, 396, 1859; Jordan & Thompson, Proc. U. S. Nat. Mus., XXXIX, 469, 1911; Odawara on Sagami Bay, Japan; Jordan, Tanaka & Snyder, Fishes of Japan, 168, 1913, same figure; Jordan & Jordan, Mem. Carnegie Mus., X, No. 1, 51, 1922.

*Caranxomorus sacrestinus* Lacépède, op. cit., V, 682, 1803, from a description by Commerson of the species already named *furcatus* from his drawing.

*Aphareus carulescens* Cuvier & Valenciennes, Hist. Nat. Poiss., VI, 487, 1830, *Île de France* (name a substitute for *furcatus* and *sacrestinus*).

Color, lustrous gray-blue in life, silvery below; a slight golden wash on sides medially; no red, nor clear yellow anywhere; dorsal fin all blackish, the posterior edge slightly red; caudal blackish with a broad pink edge behind; anal yellowish, reddish on tips; pectoral pinkish; ventral gray with a little pinkish.

This species, like the others of this family, has soft flesh of good flavor. It is readily distinguished from the two others found with it in Hawaii by the form of the dorsal fin, in which the third ray is not elevated above the fourth, and the pectoral is as long as the head and with a distinct lower lobe. The

slender body, larger mouth, longer head and the coloration readily distinguish it. It is dull in color without bright red or yellow. Dorsal X, 11, as in all the species of the group.

**Fares** Jordan, Evermann & Tanaka, new subgenus

*Type: Aphareus thompsoni* Fowler = *Aphareus rutilans* Cuv. & Val.

This subgenus is closely allied to *Aphareus* but has the gill-rakers very long, about 51 in number ( $17 + 34$ ), and the caudal fin longer than head and very deeply forked; last ray of dorsal and anal prolonged in a filament and more than twice length of other rays; pectoral fin with a strong lower lobe. *Fares* is the Arabic name of "*Aphareus rutilans*," which suggested to Cuvier the name *Aphareus*, an unidentified Greek name of some fish.

**29. *Aphareus (Fares) rutilans* (Cuvier & Valenciennes)**

Plate 24, fig. 1

*Aphareus rutilans* Cuv. & Val., Hist. Nat. Poiss., VI, 490, 1830, Red Sea.  
*Aphareus thompsoni* Fowler, Occ. Papers Bishop Museum, VIII, no. 7,  
p. 382, 1923, Honolulu.

Two specimens examined respectively 630 and 800 mm. long. Nine others were seen in the Honolulu market; the largest weighed 20 pounds.

Teeth minute, rasp-like in front of lower jaw and along upper, none on vomer or palatines; pseudobranchiæ very large; gillrakers very long, 16 or  $17 + 32$  to  $35 = 48$  to 52; third, fourth and fifth dorsal spine highest, subequal. Pectoral falcate, about as long as head, with a distinct lower lobe; ventral long; caudal lobes very long, 3 to 3.75 in body, nearly as long as head, longer than the head in large examples, 3.5 in length; scales 73. Dorsal X, 11, the first spine very short.

Color in life, dull pink above, silvery below; top of head clear brownish red; lower jaw silvery purplish; fins brick red;

whole edge of dorsal besides its base, bright yellow, its base with bright yellow spots on the membranes; anal pink, the long filament deeper red; ventral pink, tip white; caudal red, varying to yellowish.

In alcohol, the red colors fade and the body and fins become dusky brown.

This species reaches a much larger size than either of the two others. It is not uncommon in the markets of Honolulu in October, and is valued as food. In all the species the flesh is soft, but of good flavor.

The plate of *Aphareus rutilans* given by Bleeker, later identified as *A. furcatus* by the same author, certainly represents this species rather than *A. furcatus*, and Cuvier's account of *Aphareus rutilans* accords better with this which is gray-red in life rather than gray-blue.

#### Family MULLIDÆ

##### 30. *Upeneoides arge* Jordan & Evermann Weke pahala or Crazy Surmullet

Hon. John M. Wilson, Mayor of Honolulu, reports that eating the head of this fish produces a sort of delirium ("Loco"). At one time in Molokai 30 or 40 Japanese laborers working for Mr. Wilson ate the heads (with bodies) of many examples and were mentally paralyzed at the time. Mrs. Wilson once attended a function at which this fish was served. All members of the party had weird visions, some of them wandering about the house all night long. It was agreed that "somebody must have died in that room",—a Hawaiian superstition. It is agreed that the poison lies in the brain. A fresh example was turned over in November to Dr. Nils Larsen, director of the Queen's Hospital. He fed the brain to a cat, which at once went crazy, but recovered, as in fact, all cases soon recovered. Dr. Larsen fed other species and the flesh of *U. arge* to cats but with no result. In the winter he fed the brain of this species to cats and they were not affected.

## Family CHÆTODONTIDÆ

31. *Chætodontoplus arcuatus* (Gray)

All markings black, with clear white around the black; back brownish, with pale spots.

Very rare; it has not been seen for many years. It is well figured by Günther.

## Family LABRIDÆ

32. *Lepidaplois macrourus* (Lacépède)

There is in the Bishop Museum a cast of a specimen of this species from Laysan Island. It is 1.5 feet long. Top of head with 4 blackish violet stripes on each side, red between; sides of head gray, with small round red spots; a dark shade backward from mouth; whole back deep scarlet red, unstriped; black patches under last dorsal rays large; preopercular limb broadly naked, except for two scales; ventrals falcate, reaching nearly to anal, edged with pale within the gray-blue, yellow on membranes, scarlet on spines, outer rays light blue; base of spinous dorsal blackish on membranes all the way; soft rays scarlet orange. Scales 31.

## Family SCARIDÆ

33. *Scaridea zonarcha* Jenkins

Body gray, with some scales white, some black, some dull yellow; 3 orange-brownish bands on chin, alternating with white; head speckled and spotted with whitish; caudal dusky behind, with slight pale edge; outer rays barred with dark, inner profusely speckled with white; fins much mottled; pectoral light yellow; scales much and irregularly spotted; anal yellowish, much mottled. Not rare in the markets of Honolulu; several specimens obtained.

34. *Scarus leucostigma* Jordan, Evermann & Tanaka,  
new species

Plate 24, fig. 2

Head 3 in length without caudal; depth 2.66; eye 7.13 in head; interorbital 2.56; snout 2.34; preorbital 3.57; D. IX, 10; A. III, 9; P. 15; C. (branched rays) 11; scales 2-23-6.

Body deep, compressed; dorsal profile evenly convex from tip of snout to base of caudal peduncle which is deep and strongly compressed; ventral outline nearly similar to the dorsal; head large, heavy, deep and compressed; eyes high up, lateral; interorbital broad, strongly convex; snout long, very blunt; mouth small, in axis of body; jaws subequal, the lower slightly included; teeth whitish, yellowish at base; posterior canine not developed; upper lip double only posteriorly, covering only about half the dental plate; cheek with two rows of scales, seven scales in the upper and only one in the lower row; no scales on lower limb of preopercle; posterior limb of opercle with two rows of large scales; anterior limb with a single series; opercle with a short broad flap; five scales on median line in front of dorsal; spines subequal, soft rays slightly elevated posteriorly, the longest 2.34 in head; anal similar to soft dorsal; pectoral rather long, not quite reaching origin of anal, its upper longest rays 1.46 in head; posterior margin oblique, very broadly rounded; ventrals inserted below base of pectoral, shorter than the latter fin, reaching short of vent by about one-half its length; caudal very broad, subtruncate, its outer rays 1.58 in head. Scales large and thin, closely covered with granulations except on the margin; a row of modified scales at base of dorsal and anal; last scale of lateral line very broad and large, more than half width of caudal peduncle and much the largest of all the scales; lateral line following curvature of back to the tenth row of scales except one under the last ray, then dropping down two rows and continuing on middle of caudal peduncle to base of caudal, 18 pores in the upper row and 7 in lower.

Color in life, deep red brown, a little clearer below; fins all dark red, dorsal and caudal narrowly edged with dark blue;



ventral and anal same as pectoral, dull red, front rays bluish; a pale yellowish area across head; before eye an oblong figure, somewhat as in *Scarus perspicillatus* and *Scarus kraussi*, but made up of separate bluish white spots, very distinct, not connected, the central figure not divided on median line; an irregular white band across lower jaw; many rounded, sharply-defined, pale spots along side of head below. The other side not quite the same, the white spots on the two sides of head therefore not quite symmetrical, 18 spots on left, 16 on right; an oblong white spot on median line behind chin; jaws pink, white-edged.

Color in alcohol, back dark purplish brown, much lighter below; head similar in color to upper part of body; vertical fins dark purplish brown, with narrow dark margin except caudal which has a dark-blue margin around; pectoral and ventral dusky, the latter fin having darker tip; pale spots and marks as above described.

The species is allied to *Scarus miniatus*, differing from the latter in having much darker color, and especially in having the caudal fin slightly rounded and in having peculiar markings on head.

*Type:* No. 370, Mus. Calif. Acad. Sci., a specimen 245 mm. long, obtained by Jordan and Evermann, in October, 1925, in the market at Honolulu.

### 35. *Scarus gilberti* Jenkins

Panuhunuhu

Color pale blue, green-shaded posteriorly; edge of each scale dull brownish red; head brown above; two short green streaks behind eye; cheeks greenish shaded; a bright blue stripe below eye to upper lip where it broadens to cover upper jaw; lower lip blue then broadly brown, then broadly bright blue; a cross-shaped blue figure on each side of throat; breast with 3 bluish shades, then a bright blue median stripe to ventral; ventrals mesially pink, first and last rays bright blue; pectoral with the front rays bright blue; axil black within; sides of belly with faint streaks made of the blue of the scales; dorsal

pinkish, a blue stripe at base and a blue margin; anal creamy pink, with stripes as on the dorsal but brighter and broader; caudal moderately lunate, the middle rays 1.67 in head; middle rays orange with 3 rows of blue spots, the outer forming a margin; mesial part of fin pale orange. Posterior canine present. *Scarus jenkinsi* Jordan & Evermann seems the same as *Scarus gilberti*, but with green shades instead of blue.

### 36. *Scarus ahula* Jenkins

#### Panuhunuhu

Very pale, livid purplish, edge of scales brownish; head plain, pale, upper lip nearly covering jaw; no posterior canines. Scales in 2 rows on cheek. Anterior profile very convex; fins all creamy pink, paler at base; caudal slightly concave; body plump; eye small; caudal with slight dusky edge below and behind. Head 3.5; depth 3. This specimen shows no depression above eye, though it agrees otherwise with *Scarus ahula*.

#### Family GOBIIDÆ

### 37. *Chonophorus stamineus* (Eydoux & Souleyet)

#### Plate 24, fig. 3

Head 2.8 in length without caudal; depth 4; eye 7 in head; interorbital width between bones 10.5; snout 2.53; depth of caudal peduncle 3.51; maxillary 2.1; D. VI-10; P. 15; C. (branched rays) 13; scales 65-25.

Body tad-pole like, oblong, compressed; very large anteriorly; caudal peduncle moderately deep, strongly compressed; dorsal outline evenly and regularly curved from tip of snout to caudal peduncle, ventral outline a little less arched. Head very large, heavy, with gently curved profile; eye high, directed slightly obliquely upward at the middle of length of head; interorbital width between bones very narrow; snout long, 1.11 in postorbital part of head; maxillary extend-

ing to vertical through front of eye, subinferior and sub-horizontal; lips broad, thick, upper one much more so; lower jaw included; teeth in jaws small, acute, in rather wide bands a little narrower laterally; tongue slightly notched at tip; gill-openings large, almost lateral, the membranes joined to the broad isthmus, the width of which is 3.94 in head; shoulder-girdle with two fleshy prominences as usual in *Chonophorus*; pseudobranchiæ present; gillrakers 3 + 6, short, blunt and with smooth edges. First dorsal with its free margin usually broadly rounded, sometimes concave, fourth spine longest, its length 2.11 in head; second dorsal higher than first, the rays except first two subequal, length of most rays of fin 2.74 in head; anal inserted below fourth soft ray of dorsal, its rays a little shorter, 2.86 in head, neither fin reaching caudal when depressed; pectoral broad, with rather acutely rounded posterior margin, middle rays longest, 1.85 in head, reaching over vent; width of pectoral base 3.5 in head; no silky rays on upper part of pectoral; ventral inserted beneath pectoral, reaching a little beyond middle of pectoral when depressed; caudal rather long, rather acutely rounded, middle rays 1.59 in head; scales moderate in size, cycloid; head entirely naked.

Color in alcohol, as in life, brownish black above, much lighter below; head also brownish black all over except posterior margin of branchiostegal membranes which is distinctly whitish; upper and middle part of body faintly and irregularly mottled, a little more distinctly so along middle of body; all the fins colored like upper part of body except ventral which is light dusky, with whitish margin all around; posterior margin of pectoral and free margin of anal whitish; a diffuse black blotch at base of caudal; no ocelli nor other definite markings; the marks all fainter in large examples, which become uniform dusky.

This species is very abundant in pools of mountain streams and also in irrigation ditches in the island of Oahu. Upwards of a hundred specimens were obtained for us by boys with hook and line in Gray's pool in Kalihi Stream, some five miles northwest of Honolulu. It is found in great abundance in the broad irrigating ditch supplying the great Ewa plantation near

Pearl Harbor in Oahu. At the time of collecting in Kalihi pool, some thousands of eggs of the Japanese Ayu, *Plecoglossus altivelis*, were planted by Dr. Chiyometsu Ishikawa, the gobies being removed as likely to endanger the young Ayu.

Family MOLIDÆ

38. *Ranzania makua* Jenkins

Three vertical pale bars on head, unequal, each edged with black; 3 black bands on tail, edged with white. Dorsal and anal pale mesially, edge broadly dark. This species which varies in color with age is probably identical with *Ranzania truncata* Nardo, of Brazil.

An excellent colored plate of the type of this species is given by Dr. Jenkins in Proc. Calif. Acad. Sci., Ser. 2, Vol. V, 1895 (Oct. 31), p. 779, frontispiece.